

REMARKS

Section 112, Second Paragraph, Rejection

Claim 6 stands rejected under 35 U.S.C. 112 as being indefinite for failing to particularly point out and distinctly claim the invention. In particular, the Office Action states that claim 6 recites the limitation “said lithographic springs” in line 1, which lacks antecedent basis. Based on the above amendments and the following remarks, this rejection is believed overcome.

Initially, to broaden claim 5, the language originally providing the antecedent basis for claim 6 “wherein said spring contacts comprise lithographic springs” has been removed. Claim 6 is accordingly been amended to refer to the “spring contacts” recited in claim 5, and to clarify language to indicate that the spring contacts are “formed using lithography.” Accordingly, the language in dependent claim 6 is believed to have antecedent basis in claim 5. New claim 32 has also been added to further define the “spring contacts” in claim 5. All of claims 5, 6 and 32 are, thus, now believed allowable under 35 U.S.C. 112.

Section 103 Rejection

Claims 5-8, 16 and 23 stand rejected under 35 U.S.C. 103 as being unpatentable over Tilton et al (hereafter Tilton) in view of Smith et al (hereafter Smith). The Office Action states Tilton teaches a cooling assembly comprising: an electronic package 10, Figs. 1-4 having a cavity 19; a plurality of dies 11; a bottom substrate 26 and a coolant surrounding interconnects 27 within the cavity; an inlet 22 and an outlet 23 coolant ports that allow the coolant to enter the cavity 19, the coolant directly cooling each active surface of each die 11. The Office Action continues stating Tilton does not teach said interconnects 27 being compliant and comprising lithographic springs, but Smith teaches a lithographically patterned spring contact. The Office Action then states it would have been obvious to one skilled in the

art to employ lithographically patterned spring interconnects as taught by Smith in the device by Tilton in order to further decrease mechanical stress caused by thermal expansion of the components. This rejection is respectfully traversed.

The interconnects 27 of Tilton are “insertion pins” for inserting into dies 11. (Tilton, col. 5, line 16 et. seq.) A person of ordinary skill would not combine the compliant pins of Smith with Tilton because a “compliant” nature in the Tilton assembly would prevent insertion of the insertion pins 27 into the dies 11. With claims 5-8, 16 and 23 all claiming “compliant interconnects,” Applicant maintains that these claims are allowable as non-obvious under 35 U.S.C. 103 over Tilton in view of Smith.

Further, with Tilton disclosing that the cross-section area and length of the insertion pins 27 is critical to decrease mechanical stress (Tilton, col. 5, lines 28-31), Applicant maintains that the Office Action reasoning for combining Tilton and Smith to “decrease mechanical stress” will not be aided by using compliant interconnects. For insertion of the insertion pins 27 into the dies 11, with expansion of the pins 11 (resulting in increased cross-sectional area), they will be more difficult to insert. Using compliant interconnects will make the pins resist insertion even more, a feature that would lead a person of ordinary skill in the art not to combine Tilton and Smith. Claim 32 has been added with the limitation that the compliant interconnect is not inserted to emphasize this distinction over Tilton. Accordingly, Applicant further maintains that claims 5-8, 16, 23 and 32 are allowable as non-obvious under 35 U.S.C. 103 over Tilton in view of Smith.

Allowable Subject Matter

Claims 17, 20-21 and 24-26 are indicated as being allowed.

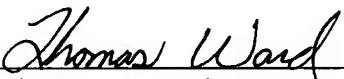
Conclusion

In light of the above amendments and remarks, claims 5-8, 16-17, 20-21, 23-26 and 32-33 are now all believed to be in condition for allowance. Accordingly, reconsideration and allowance of these claims is respectfully requested.

No fee is believed due with this response. Should a fee be due, the Commissioner is hereby authorized to charge the fee to Deposit Account No. 06-1325.

Respectfully submitted,

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